

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (Currently Amended) An electric field communications system, comprising:
 - a transmitter apparatus, comprising:
 - a transmitter main electrode provided in a location so as to exert readily exert an electric effect on a dielectric;
 - a transmitter return electrode;
 - a signal generator that generates ~~an electric~~ a transmission signal; and
 - a modulator that modulates a voltage difference between said transmitter main electrode and said transmitter return electrode in response to ~~an electric~~ transmission signal;
 - a receiver apparatus, comprising:
 - a receiver main electrode provided in a location where said receiver main electrode is readily subjected readily to an electric effect from said dielectric;
 - a receiver return electrode that establishes an electrostatic coupling with said transmitter return electrode; and
 - a measuring part that measures an electric status generated between said receiver main electrode and said receiver return electrode; and

a demodulator that acquires an electric signal based on a measurement result by said measuring part and acquires said transmission signal by demodulation of the electric signal,

wherein said measuring part[[s]] comprises:

an electro-optical crystal that exhibits a Pockels Effect and modulates light penetrating said electro-optical crystal in response to an electric field in [[the]] a space where said electro-optical crystal is located;

light emitting means that emits light to said electro-optical crystal; and

light receiving means that receives light penetrating said electro-optical crystal, and outputs signals in response to the received light; and

at least one of a return electrode electrically connected to said receiver return electrode and positioned nearer said electro-optical crystal than said receiver return electrode, and a destination electrode electrically connected to said receiver main electrode and positioned nearer said electro-optical crystal than said receiver main electrode.

2. (Currently Amended) An electric field communications system according to Claim 1, wherein said receiver return electrode is connected to a plus positive power supply, a minus negative power supply, or a part having a low impedance and a stabilized electric potential.

3. (Original) An electric field communications system according to Claim 1, wherein said receiver return electrode is connected to a cabinet, said cabinet accommodating said receiver return electrode and being made of conductive materials.

4. (Currently Amended) An electric field communications system according to Claim 1, wherein said transmitter return electrode is connected to a ~~plus positive~~ power supply, a ~~minus negative~~ power supply, or a part having low impedance and stabilized electric potential.

5. (Original) An electric field communications system according to Claim 1, wherein said transmitter return electrode is connected to a cabinet, said cabinet accommodating said transmitter return electrode and being made of conductive materials.

6. (Original) An electric field communications system according to Claim 1, wherein said transmitter apparatus and said receiver apparatus are included in a single cabinet.

7. (Currently Amended) An electric field communications system according to Claim 1, wherein ~~an electrode has functions of~~ said transmitter main electrode and

said receiver main electrode are implemented together using a single electrode, or
~~functions of~~ said transmitter return electrode and said receiver return electrode are
implemented together using a single electrode.

8. (Original) An electric field communications system according to Claim 1, wherein said receiver return electrode is provided in a location where said receiver return electrode and said dielectric cannot contact one another when communication between said transmitter apparatus and said receiver apparatus is being performed.

9. (Currently Amended) An electric field communications system ~~according to~~ to Claim 8, comprising:

a transmitter apparatus, comprising:

a transmitter main electrode provided in a location so as to exert readily an electric effect on a dielectric;

a transmitter return electrode;

a signal generator that generates a transmission signal; and

a modulator that modulates a voltage difference between said transmitter main electrode and said transmitter return electrode in response to said transmission signal;

a receiver apparatus, comprising:

a receiver main electrode provided in a location where said receiver main electrode is readily subjected to an electric effect from said dielectric;

a receiver return electrode that establishes an electrostatic coupling with said transmitter return electrode;

a measuring part that measures an electric status generated between said receiver main electrode and said receiver return electrode; and

a demodulator that acquires an electric signal based on a measurement result by said measuring part and acquires said transmission signal by demodulation of said electric signal,

wherein said measuring part comprises:

an electro-optical crystal that exhibits a Pockels Effect and modulates light penetrating said electro-optical crystal in response to an electric field in a space where said electro-optical crystal is located;

light emitting means that emits light to said electro-optical crystal; and

light receiving means that receives light penetrating said electro-optical crystal, and outputs signals in response to the received light,

wherein said receiver return electrode is provided in a location where said receiver return electrode and said dielectric cannot contact one another when communication between said transmitter apparatus and said receiver apparatus is being performed, and

wherein, said receiver apparatus further comprises:

a transmitter main electrode provided in a location so as to ~~readily~~ exert
readily an electric effect on said dielectric;

a transmitter return electrode; and

a modulator that changes an electric potential provided to said transmitter main electrode of said receiver apparatus in response to data to be transmitted; and wherein, said receiver apparatus provides to said dielectric an electric field in response to the electric potential generated by said modulator; and

said transmitter apparatus further comprises:

a receiver main electrode provided in a location where said receiver main electrode of said transmitter apparatus is ~~readily~~ subjected readily to an electric effect from said dielectric;

a receiver return electrode that establishes an electrostatic coupling with said transmitter return electrode of said receiver apparatus; and

a measuring part that measures an electric status generated between said receiver main electrode of said transmitter apparatus and said receiver- return electrode of said transmitter apparatus; and

a demodulator that acquires an electric signal based on the measurement result by said measuring part of said transmitter apparatus, and acquires the transmitted data by demodulating the electric signal, [[:]]

wherein said receiver return electrode of said transmitter apparatus is provided in a location where said receiver return electrode of said transmitter apparatus and said dielectric cannot contact one another when communication between said transmitter apparatus and said receiver apparatus is being performed.

10. (Currently Amended) An electric field communications system according to Claim 8, wherein said measuring part measures a voltage difference between said receiver main electrode and said receiver return electrode, the voltage difference being generated by ~~the~~ an electric field provided ~~by~~ to said dielectric.

11. (Currently Amended) An electric field communications system according to Claim 8, wherein:

in said communications apparatus system, said transmitter main electrode is located near said receiver main electrode;

said receiver main return electrode is provided in a location where said receiver main return electrode does not contact said transmitter main electrode and said receiver main electrode; and

said measuring part measures an electric field generated between said receiver main electrode and said receiver return electrode, the electric field being

~~measured through no dielectric and being generated by said modulator and not passing through said dielectric.~~

12. (Currently Amended) An electric field communications system according to Claim 1, wherein: said measuring part comprises both of said destination electrode and said return electrode,

~~said receiving apparatus further comprises a destination electrode, said destination electrode being connected to said receiver main electrode, said destination electrode having the same electric potential as said receiver main electrode;~~

~~said receiving apparatus further comprises a and said return electrode, said return electrode being connected to said receiver return electrode, said return electrode having the same electric potential as said receiver return electrode; and~~

~~said destination electrode and said return electrode is being positioned to be opposite each other across said electro-optical crystal.~~

13. (Currently Amended) An electric field communications system according to Claim 1, wherein:

~~said transmitter apparatus changes at a regular interval a voltage difference between said transmitter main electrode and said transmitter return electrode for notifying existence of said transmitter apparatus itself;~~

said receiver apparatus acquires said electric signal based on the measurement result by said measuring part;

said receiver apparatus comprises a demodulator that acquires data transmitted from said transmitter apparatus, the data being acquired by demodulating the electric signal; and

said receiver apparatus comprises notification means that notifies a user of said receiver apparatus that said receiver apparatus is ready for communicating with said transmitter apparatus during when while said demodulator receives the notification for longer more than a predetermined time duration.

14. (Currently Amended) An electric field communications apparatus, comprising:

a receiver main electrode provided in a location where said receiver main electrode is readily subjected to receive an electric effect from said a dielectric;

a receiver return electrode that establishes an electrostatic coupling with said a transmitter return electrode; and

a measuring part that measures an electric status generated between said receiver main electrode and said receiver return electrode;

wherein said measuring part comprises:

an electro-optical crystal that exhibits a Pockels Effect and modulates light penetrating said electro-optical crystal in response to an electric field in [[the]] a space where said electro-optical crystal is located;

light emitting means that emits light to said electro-optical crystal; and
light receiving means that receives light penetrating said electro-optical
crystal, and outputs signals in response to the received light; and

at least one of a return electrode electrically connected to said receiver return
electrode and positioned nearer said electro-optical crystal than said receiver return
electrode, and a destination electrode electrically connected to said receiver main
electrode and positioned nearer said electro-optical crystal than said receiver main
electrode.

15. (Currently Amended) An electric field communications apparatus according to Claim 14, wherein said receiver return electrode is positioned far from said dielectric and faces [[tθ]] said dielectric.

16. (Original) An electric field communications apparatus according to Claim 14, wherein said receiver main electrode and said receiver return electrode are positioned to locate said electro-optical crystal in an electric field generated between said receiver main electrode and said receiver return electrode.

17. (Original) An electric field communications apparatus according to Claim 14, wherein said receiver main electrode and said receiver return electrode are positioned to be in opposing relation to one another across at least a part of said electro-optical crystal.

18. (Currently Amended) An electric field communications apparatus according to Claim 14, wherein said return electrode is in contact with said electro-optical crystal. [[:]]

~~said measuring part is connected to said receiver return electrode;~~
~~said measuring part is positioned nearer said electro-optical crystal than said receiver return electrode; and~~
~~said measuring part comprises a return electrode having the same electric potential as said receiver return electrode.~~

19. (Currently Amended) An electric field communications apparatus according to Claim 14, wherein said destination electrode is in contact with said electro-optical crystal. [[:]]

~~said measuring part is connected to said receiver main electrode;~~
~~said measuring part is positioned nearer said electro-optical crystal than said receiver main electrode; and~~

~~said measuring part comprises a destination electrode having the same electric potential as said receiver main electrode.~~

20. (Original) An electric field communications apparatus according to Claim 14, wherein:

said electric field communications apparatus further comprises an insulator having an upper face, a lower face, and side faces;

said measuring part is provided in said insulator;

said receiver return electrode is provided in a location where said receiver return electrode cannot contact said dielectric during electric field communications; and

said receiver main electrode is provided on said upper face of said insulator.

21. (Currently Amended) An electric field communications apparatus according to Claim 14, wherein said electric field communications apparatus is adapted to communicate with a transmitter apparatus having a transmitter main electrode provided in a location so as to readily exert readily an electric effect on a dielectric, and a transmitter return electrode, wherein said transmitter apparatus transmits a modulator that changes a voltage difference between said transmitter main electrode and said transmitter return electrode in response to data to be transmitted, said modulator changes the voltage difference in response to an

~~electric signal corresponding to modulated~~ notification information to notify existence of said electric field communications ~~transmitter~~ apparatus ~~at a regular interval~~, wherein said electric field communications apparatus further comprises:

a demodulator that acquires the electric signal based on the measurement result by said measuring part, and acquires ~~demodulates~~ data transmitted from said transmitter apparatus based on a measurement result of the electric status generated between said receiver main electrode and said receiver return electrode obtained by said measuring part by demodulating the electric signal; and

notification means that notifies a user of said receiver ~~electric field communications~~ apparatus that said receiver ~~electric field communications~~ apparatus is ready for communicating with said transmitter apparatus during while said demodulator receives the notification for longer more than a predetermined time duration.

22. (Currently Amended) An electric field communications apparatus according to Claim 14 21, wherein:

said transmitter apparatus further comprises an oscillator that supplies an AC voltage between said transmitter main electrode and said transmitter return electrode for charging said electric field communications apparatus;

said notification information includes information showing that said transmitter apparatus is capable of charging said electric field communications apparatus;

said electric communications apparatus comprises a rectifier that converts the AC voltage into a DC voltage, the AC voltage being induced between said receiver main electrode and said receiver return electrode;

said electric communications apparatus comprises a battery that is charged with the DC voltage obtained by said rectifier; and

said notification means notifies [[a]] the user of said electric field communications apparatus that said transmitter apparatus is ready for charging said electric field communications apparatus during when while said demodulator receives the notification more information for longer than a predetermined time duration

23. (Currently Amended) An electric field communications apparatus according to Claim 21, wherein:

said receiver main electrode is positioned near said transmitter main electrode; and

said electric field communications apparatus receives an electric effect not through said dielectric but directly without passing through said dielectric.

24. (Currently Amended) An electric field communications apparatus according to Claim 14, further comprising a demodulator that acquires an electric signal based on the measurement result by said measuring part, and acquires the transmitted data by demodulating the electric signal, wherein:

wherein said demodulator, ~~in a beginning at a start~~ of the demodulating process, detects a polarity of a header of a received packet; and
when said demodulator detects that the polarity of the header is inverted from a predetermined polarity, said demodulator inverts the polarity of the packet and demodulates the packet having the inverted polarity.

25. (Currently Amended) An electric field communications apparatus according to Claim 14, further comprising a demodulator that acquires an electric signal based on [[the]] a measurement result by said measuring part, and acquires the transmitted data by demodulating the electric signal, wherein:

wherein said demodulator comprises a temporary memory for storing a received packet; and
when said demodulator fails to ~~demodulating~~ demodulate the packet, said demodulator inverts the signal stored in said temporary memory and demodulates the packet having inverted polarity.

26. (Currently Amended) An electric field communications apparatus according to Claim 14, comprising:

a first demodulator that receives [[an]] a first electric signal based on the measurement result by said measuring part;

a second demodulator that receives [[an]] a second electric signal whose polarity is inverted from the first electric signal based on the measurement result by said measuring part; and

a circuit that receives output signals from said first demodulator and said second demodulator, and outputs a correctly demodulated signal.

27. (Original) An electric field communications apparatus according to Claim 14, wherein said receiver main electrode has a hole.

28. (Original) An electric field communications apparatus according to Claim 14, wherein said receiver main electrode is connected to a receiver -return electrode of another electric field communications apparatus.

29. (New) An electric field communications system according to Claim 1, wherein said at least one of said return electrode and said destination electrode is in contact with said electro-optical crystal.